



National Transportation Safety Board Aviation Accident Data Summary

Location:	LACEY TOWNSHIP, NJ	Accident Number:	NYC90MA009
Date & Time:	10/10/1989, 1329 EDT	Registration:	N21FL
Aircraft:	AGUSTA A109A MKII	Injuries:	5 Fatal
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

AS THE HELICOPTER WAS IN CRUISE FLT AT AN ALT OF 2200' MSL, A PORTION OF ONE OF THE MAIN ROTOR BLADES SEPARATED. THE SUBSEQUENT IMBALANCE RESULTED IN SEPARATION OF THE TRANSMISSION & MAIN ROTOR ASSEMBLY FROM THE HELICOPTER. THE HELICOPTER THEN CRASHED IN AN UNCONTROLLED DESCENT. A METALLURGICAL EXAM OF THE SEPARATED BLADE REVEALED THAT IT HAD FAILED FROM FATIGUE. THE FRACTURE HAD INITIATED AT A MANUFACTURING INDUCED SCRATCH IN THE SPAR OF THE BLADE. THE SCRATCH WAS ON THE INNER SURFACE OF THE SPAR AT BLADE STATION 2825 (IN MILLIMETERS), NEAR THE LEAD BALANCE WT. IT WAS IN LINE WITH THE EDGE OF THE ADHESIVE FILET. THERE WAS EVIDENCE THAT THE CRACK ORIGINATED WHERE A SHARP TOOL WAS USED TO TRIM THE EDGE OF THE ADHESIVE FILET. THE BLADE FRACTURED AFTER 922 HRS OF OPERATION.

Probable Cause

The National Transportation Safety Board determines the probable cause(s) of this accident to be: IN-FLIGHT SEPARATION OF A MAIN ROTOR BLADE DUE TO FATIGUE FAILURE OF THE MAIN ROTOR BLADE SPAR, WHICH ORIGINATED AT A MANUFACTURING INDUCED SCRATCH (TOOL MARK) THAT WAS THE RESULT OF INADEQUATE QUALITY CONTROL.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: CRUISE - NORMAL

Findings

1. (C) ROTOR SYSTEM,MAIN ROTOR BLADE SPAR - FATIGUE
2. (C) INADEQUATE QUALITY CONTROL - MANUFACTURER
3. (C) ROTOR SYSTEM,MAIN ROTOR BLADE - SEPARATION

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	27
Airplane Rating(s):	Single-engine Land	Instrument Rating(s):	Airplane
Other Aircraft Rating(s):	Helicopter	Instructor Rating(s):	Helicopter
Flight Time:	2900 hours (Total, all aircraft), 100 hours (Total, this make and model), 2900 hours (Pilot In Command, all aircraft), 100 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	AGUSTA	Registration:	N21FL
Model/Series:	A109A MKII A109A MKII	Engines:	2 Turbo Shaft
Operator:	PARAMOUNT AVIATION	Engine Manufacturer:	ALLISON
Operating Certificate(s) Held:	On-demand Air Taxi (135)	Engine Model/Series:	250-C20B
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	WRI, 65 ft msl	Weather Information Source:	Weather Observation Facility
Lowest Ceiling:	Broken / 4000 ft agl	Wind Speed/Gusts, Direction:	8 knots / , 190°
Temperature:	16° C	Visibility	7 Miles
Precipitation and Obscuration:			
Departure Point:	NEW YORK CITY, NY (6N4)	Destination:	ATLANTIC CITY, NJ (ACY)

Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	3 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Latitude, Longitude:			

Administrative Information

Investigator In Charge (IIC):	ALAN J YURMAN	Adopted Date:	05/18/1992
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubin@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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